CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: August 26, 2020

TO: Jennifer Jerich – SCR/Horicon

FROM: Sarah Luck – SCR/Fitchburg

SUBJECT: Zinc Water Quality-Based Effluent Limitations Addendum for Gratiot Wastewater Treatment Facility
WPDES Permit No. WI-0024139

The Department has received additional information from the permittee specifically related to zinc and a request that the limit be removed. Therefore, an updated evaluation of zinc water quality-based effluent limitations is presented below. The recommendations in this addendum replace those in the WQBEL memo dated June 28, 2018.

Facility Description:
The Village of Gratiot operates a wastewater treatment facility that serves a population of approximately 236 with no industrial contributors. Wastewater is conveyed by gravity sewer system to a lift station located near the intersection of STH 11 and Sheldon Street. The lift station pumps the sewage through 3520 feet of 4" force main to the first chamber of the solids settling tank. In the first chamber of the solids settling tank, solids settle to the bottom of the tank, while liquid passes through the transfer pipe between the two chambers of the tank. Further settling occurs in the second chamber. Decomposition of organic solids occurs in both chambers of the tank. After liquid passes through the solids tank, it passes into the wet well. One of the two self-priming, non-clog sewage pumps moves the liquid through the 4" diameter filter feed pipe to the sand filter. At the sand filter, the liquid is distributed through 3" diameter headers to 1 1/2" diameter perforated distribution pipes. Once the liquid passes through the sand filter, it is collected at the bottom of the filter by slotted collection pipes and then goes to a recirculation channel where some goes back to the wet well and some goes through UV disinfection chamber and to the outfall.

Receiving Water Information:
- Name: Wolf Creek
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm water sport fish community, non-public water supply.
- Low Flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code:
  $7\text{-}Q_{10}$ = 3.5 cfs (cubic feet per second)
  $7\text{-}Q_2$ = 7 cfs
- % of low flow used to calculate limits in accordance with s. NR 106.06 (4) (c) 5., Wis. Adm. Code: 25%

Effluent Information:
- Flow Rate:
  Design annual average = 0.035 MGD (Million Gallons per Day)
  For reference, the actual average flow from January 2018 through July 2020 was 0.029 MGD.

Water Quality Based Effluent Limits for Zinc
Delta 3 Engineering, Inc, on behalf of the Village of Gratiot, submitted a Report on Effluent Zinc Discharges to the Department on March 23, 2020. Additionally, Gratiot Wastewater Treatment has been sampling monthly for total recoverable zinc as part of the reissued WPDES permit which went into effect on July 1, 2019. All sampling data for zinc since 2018 is presented in the tables below.

Sample Date	Zinc µg/L	Sample Date	Zinc µg/L	Sample Date	Zinc µg/L
2/6/2018	151	10/4/2018	24	1/2/2020	65.00
6/1/2018	85	12/12/2018	60	2/4/2020	88
6/8/2018	568	12/11/2018	63	3/3/2020	80
7/25/2018	45	9/24/2019	25	5/5/2020	57
7/25/2018	44	9/25/2019	24	6/2/2020	44
10/1/2018	27	10/8/2019	22	7/7/2020	48
10/2/2018	31	11/5/2019	43		
10/3/2018	28	12/2/2019	55		
1-day P_{99} = 526 µg/L					
4-day P_{99} = 287 µg/L					

Sample Date	Zinc lb/day	Sample Date	Zinc lb/day	Sample Date	Zinc lb/day
9/24/2019	0.0257	12/2/2019	0.009	5/5/2020	0.006
9/25/2019	0.0251	1/2/2020	0.008	6/2/2020	0.011
10/8/2019	0.0183	2/4/2020	0.012	7/7/2020	0.006
11/5/2019	0.008	3/3/2020	0.013		
1-day P_{99} = 0.0374 lb/day					
4-day P_{99} = 0.0233 lb/day					

Reasonable Potential
Based on a comparison of the effluent data and calculated effluent limitations, the 1-day P_{99}s (526 µg/L and 0.0374 lb/day, respectively) are less than the calculated daily maximum effluent limitations (689 µg/L and 0.20 lb/day). Therefore, **no reasonable potential is shown, and effluent limits are no longer required.**

Also, since the zinc limit is removed, **acute whole effluent toxicity (WET) testing is also no longer required**. Point totals in the WET checklist decrease from 18 to 13 points when the acute limit for zinc is removed, and 13 points is below the threshold for recommended acute WET testing. For more detailed information, please refer to the WQBEL memo dated June 28, 2018.

Summary
Since daily maximum limitations are no longer required, weekly and monthly average limitations are also dropped since expression of limits is no longer applicable. It is recommended that monitoring for zinc continue; however, the frequency can be decreased to quarterly. Furthermore, acute WET testing is also no longer required with the removal of the limit.

If there are any questions or comments, please contact Sarah Luck (Sarah.Luck@wisconsin.gov).

PREPARED BY: Sarah Luck Date: August 26, 2020
Sarah Luck
Water Resources Engineer

E-cc: Caitlin O'Connell, Wastewater Engineer – SCR/Dodgeville
Diane Figiel, Water Resources Engineer – WY/3